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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/803,819

03/13/2001

Teruhiko Hagiwara

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01/29/2003

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EXAMINER

VARGAS, DIXOMARA

ART UNIT

PAPER NUMBER

2862

DATE MAILED: 01/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/803,819

Applicant(s)

HAGIWARA, TERUHIKO

Examiner

Dixomara Vargas

Art Unit

2862

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-9, 12-17 and 20-28 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 3-9, 12-17 and 20-28 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 3-9, 12-17, 20-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prammer (US 6,005,389) in view of Hagiwara (US 6,366,088).

With respect to claims 3, 12 and 20, Prammer discloses a method for measuring an indication of attributes of materials containing a fluid state, the method comprising the steps of: providing a time-domain signal indicative of attributes of said materials in a single measurement (Column 3, lines 32-36; Figures 8A and 9B); constructing a time domain averaged data train from said signal (Column 4, lines 3-21), the averaging being performed over one or more time intervals (Column 8, lines 12-18; Figures 2 and 5), and computing an indication attributes of said materials from the time-domain averaged data train (Column 4, lines 18-21).

Prammer discloses the claimed invention except for the step wherein at least two of said two or more time intervals are different. Hagiwara discloses said difference (Columns 4 and 5, lines 49-67 and 1-48). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Prammer for the purpose of minimizing the power consumption of the device while maintaining a maximum SNR.

3. With respect to claim 4, Prammer discloses the following expression is used to construct the time-domain average data train: $S_{\Delta}(t) = \int_t^{t+\Delta} dt' S(t') / \Delta$; where $S_{\Delta}(t)$ is the provided time-domain signal (Column 11, line 10, equation #5).

4. With respect to claims 5, 15 and 23, Prammer discloses the interval Δ is fixed and the time-domain averaged data train is constructed at times $t = t_0, t_0 + \Delta, t_0 + 2\Delta, \dots t_0 + N\Delta$ (Column 8, lines 12-18).

5. With respect to claim 6, Prammer discloses the time-domain signal is an NMR echo train (Figures 8A and 9B).

6. With respect to claims 7, 16 and 24, Prammer discloses computing an indication of attributes is performed using inversion of the constructed time-domain averaged data train into T_2 domain (Column 9, lines 25-40).

7. With respect to claims 8, 17, 25 and 27, Prammer discloses the T_2 distribution is estimated using the following expression: $S_{\Delta}(t) = \sum_{(T_2)} \phi(T_2) \exp(-t/T_2)(1 - \exp(-\Delta/T_2)) + \text{Noise}$ where $\phi(T_2)$ is the porosity corresponding to the exponential decay time T_2 (Column 10, lines 55-60, equation #3).

8. With respect to claims 9, 13, 21 and 28, Prammer discloses averaging two or more constructed time-domain averaged data trains to increase the signal-to-noise ratio (SNR) of the measurement (Columns 5 and 11, lines 38-42 and 24-32 respectively).

9. With respect to claims 14 and 22, Prammer discloses the following expression is used to construct the time-domain averaged data train: $\text{Echo}_{\Delta}(t) = \int_t^{t+\Delta} dt' \text{Echo}(t') / \Delta$ where $\text{Echo}_{\Delta}(t)$ is the provided time-domain signal (Column 11, lines 1-5 equation # 4).

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10. With respect to claim 26, see rejection of claims 3-5 above.

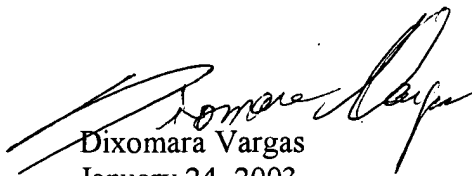
Conclusion


11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional prior art cited at the PTO 892 discloses NMR logging tools methods and apparatus wherein averaging being performed over one or more time intervals.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dixomara Vargas whose telephone number is (703) 305-5705. The examiner can normally be reached on 8:00 am. to 4:30 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (703) 305-4816. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0956.


Dixomara Vargas
January 24, 2003


EDWARD LEFKOWITZ
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